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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/535,174
Filing Date: March 17, 2006
Appellant(s): BEGUINOT ET AL.

Keiko K. Takagi
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/30/2009 appealing from the Office action mailed 1/30/2009.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal: None.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4,171,233	Vander Voort	10-1979
WO96/22396	Bhadeshia et al	3-1999

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vander Voort (US 4,171,233, thereafter US'233) or Bhadeshia et al (WO 96/22396, thereafter WO'396).

Regarding claim 1, US'233 teaches a steel with high hardenability, high hardness, and good toughness (Abstract of US'233). The composition comparison between US'233 and the instant invention is listed in the following table. All the composition ranges disclosed by US'233 overlap the composition ranges of the instant invention, which is a prima facie case of obviousness. SEE MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to select the claimed compositions of C, Si, Mn, Ni, Cr, Cu, Mo, W, B, N, Al, and Fe from the composition disclosed by US'233, because US'233 discloses the same utility throughout the disclosed ranges.

US'233's steel is austenitized, cooled, and is single or double tempered at 300 to 400°F, which would result in a martensitic microstructure. In Table VIII, wherein examples of

the properties of the steel are provided, the amount of the residual austenite ranges from 2.6-17%, which overlaps the range of 3-20% of residual austenite as recited in the instant claim 1. The disclosed microstructure and composition allow for the weldability of the disclosed steel (Col.5, lines 29-56 and Table VIII of US'233).

Element	From instant Claim 1 (in wt%)	US'233 (Table in summary) in wt%	Overlapping range (in wt%)
C	0.4-0.5	0.3-0.8	0.4-0.5
Si	0.50-1.50	0-2	0.5-1.5
Mn	0-3	0-2	0-2
Ni	0-5	0-4	0-4
Cr	0-4	0-3	0-3
Cu	0-1	Trace amount	Trace amount
Mo+W/2	0-1.5	Mo: up to1.5; W: up to1.5	0-1.5
B	0.0005-0.010	0.0005-0.012	0.0020 or less
N	0-0.025	0.8-1.35	0.9-1.35
Al	0-0.9	0-0.1	0-0.1
Si+Al	0-2.0		
Fe	Balance	Balance	Balance
Optional			
One of V, Nb, Ta, S, and Ca	0.3 or less	V:0-1, Nb:0-0.1, S:0-0.025	V:0-1, Nb:0-0.1, S:0-0.025
Ti , Zr	0.5 or less	Ti:0-0.5	Ti:0-0.5

Regarding the equations in the instant claims 1-5, they fully depend on the alloy compositions. It is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, In re Cooper and Foley 1943 C.D.357, 553 O.G.177; 57 USPQ 117, Taklatwalla

v.Marburg. 620 O.G.685, 1949 C.D.77, and In re Pilling, 403 O.G.513, 44 F(2) 878, 1931 C.D.75. In the instant case, in the absence of evidence to the contrary, the selection of the proportions of elements, B, N, Ti, Al, Ni, Mn, Cr, Mo, and W from US'233 in order to meet the claimed equations would appear to require no more than routine investigation by those ordinary skilled in the art. In re Austin, et al., 149 USPQ 685, 688.

Regarding claim 1, WO'396 teaches a wear and rolling contact fatigue resistant bainitic steel (Abstract of WO'396). The composition comparison between WO'396 and the instant invention is listed in the following table. All the composition ranges disclosed by WO'396 overlap the composition ranges of the instant invention, which is a prima facie case of obviousness. SEE MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to select the claimed compositions of C, Si, Mn, Ni, Cr, Cu, Mo, W, B, N, Al, and Fe from the composition disclosed by WO'396, because WO'396 discloses the same utility throughout the disclosed ranges.

Still regarding claim 1, WO'396 teaches a martensitic-bainitic microstructure with retained austenite (Page 7, fifth paragraph, Page 9, second paragraph and claim 1 of WO'396).

Element	From instant Claim 1 (in wt%)	WO'396 (Table A) in wt%	Overlapping range (in wt%)
C	0.4-0.5	0.05-0.5	0.4-0.5
Si	0.50-1.50	Al and/or Si: 0.50-3.0	0.5-1.5
Mn	0-3	0.05-2.5	0.05-2.5
Ni	0-5	0-3.0	0-3
Cr	0-4	0.25-2.5	0.25-2.5
Cu	0-1	0-3.0	0-1.0
Mo+W/2	0-1.5	Mo: up to1.5; W: up to1.5	0-1.5
B	0.0005-0.010	0-0.0050	0.0005-0.0050
N	0-0.025		0.9-1.35
Al	0-0.9	Al and/or Si: 0.50-3.0	0.5-0.9
Si+Al	0-2.0	Al and/or Si: 0.50-3.0	0.5-2
Fe	Balance	Balance	Balance
Optional			
One of V, Nb, Ta, S, and Ca	0.3 or less	V:0-0.5, S:0-0.025	V:0-0.5, S:0-0.025
Ti , Zr	0.5 or less	Ti:0-0.1	Ti:0-0.1

Regarding the equations in the instant claims 1-5, they fully depend on the alloy compositions. It is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, In re Cooper and Foley 1943 C.D.357, 553 O.G.177; 57 USPQ 117, Taklatwalla v.Marburg. 620 O.G.685, 1949 C.D.77, and In re Pilling, 403 O.G.513, 44 F(2) 878, 1931 C.D.75. In the instant case, in the absence of evidence to the contrary, the selection of the proportions of elements, B, N, Ti, Al, Ni, Mn, Cr, Mo, and W from WO'396 in order to meet the claimed equations would appear

to require no more than routine investigation by those ordinary skilled in the art. In re Austin, et al., 149 USPQ 685, 688.

(10) Response to Argument

The appellant's arguments filed on 11/30/2009 have been fully considered but they are not persuasive.

In the remarks, appellant argues:

1, regarding the prior art Vader Voort (US'233), US'233 describes a steel for mold that can contain boron. However, when the steel does contain boron, the silicon content should be limited, for examples, the silicon is at most 0.29wt% in the boron contain steel of US'233; There is no teaching in US'233 regarding any relationship between silicon and boron; US'233 does not consider weldability of the steel, it is submitted that the synergistic effect of the combination of silicon and boron are unexpected from US'233.

2, Regarding the prior art Bhadeshia et al (WO'396), WO'396 describes a steel for rails having good weldability due to the structure, which is bainitic after air cooling (Page 6, 2nd paragraph of WO'396). However, carbon content is less than 0.5wt%, or better yet, less than 0.35wt% and boron is only optional; WO'396 does not give disclose any indication concerning a possible advantage resulting from simultaneous presence of boron and a high content of silicon.

Responses are as follows:

Regarding the arguments 1 and 2, it has been settled in many court decisions that when a claimed range of an element in a composition is either inside, overlapped or

close to the range of the same element in a prior art composition, a prima facie case of obviousness is established since it would have been obvious to one having ordinary skill in the art to construct a composition comprising said element having a concentration selected within the disclosed range. In the instant case, US'233's or WO'396's steel composition overlaps the claimed steel composition. MPEP 2144.05 I.

Still regarding the argument 1, the weldability is a property of the alloy, which depends on alloy's composition and heat treatment. Because US'233 teaches the similar steel with the similar austenitizing, cooling and tempering as recited in the instant invention, the asserted weldability would be highly expected for the steel of US'233. MPEP 2112.01. The Examiner notes that the Appellant does not provide any evidence to prove the criticality of boron plus a high content of silicon as claimed for the argued unexpected weldability result.

Still regarding the argument 2, WO'396 teaches carbon range of 0.05-0.50wt% and boron up to 0.0050wt% (table A of WO'396), which overlap the carbon range of 0.40-0.50wt% and boron range of 0.0005 to 0.010wt% of the instant claims. A prima facie case of obviousness is established since it would have been obvious to one having ordinary skill in the art to construct a composition comprising said element having a concentration selected within the disclosed range. MPEP 2144.05 I. The Examiner notes that the Appellant does not provide any evidence to prove the criticality of the ranges of carbon and boron elements for the claimed steel.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Jie Yang/

Jie Yang, Art Unit 1793

Conferees:

/Roy King/

Supervisory Patent Examiner, Art Unit 1793

/Stanley Silverman/

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